

WHAT IS CLAIMED IS:

1. An electron microscope comprising:
  - an electron gun for emitting an electron beam;
  - a system of condenser lenses for focusing said electron beam onto a specimen;
  - a deflection means for scanning the focused electron beam on the specimen;
  - a system of magnifying lenses for creating a magnified image of said specimen based on the electron beam transmitted through the specimen as a result of irradiation of the electron beam;
  - a photography means for performing photography to take a photograph of a TEM image of the specimen magnified and focused by said system of magnifying lenses; and
  - a control means for controlling said system of condenser lenses to focus the electron beam emitted from said electron gun onto said specimen during a search operation conducted to search for a field of view of interest prior to said photography and for controlling said deflection means so that the focused electron beam scans said specimen in two dimensions.
2. The electron microscope of claim 1, wherein there is further provided a stigmatic correction means, and wherein said control means controls said stigmatic correction means in such a way that the electron beam on the specimen has astigmatism that elongates the cross section of said electron beam in a direction perpendicular to the direction of scanning.
3. The electron microscope of claim 1 or 2, wherein an air core coil or coils are used as said deflection means.
4. A method of photographing a transmission electron microscope (TEM) image of a specimen, using an electron microscope having an electron gun for emitting an electron beam, a system of condenser lenses for focusing said electron beam onto a specimen, a deflection means for scanning the focused electron beam on the specimen, a system of magnifying lenses for creating a magnified image of said specimen based on the electron beam transmitted through the specimen as a result of irradiation of the electron beam, and a photography means for performing photography to take a photograph of a TEM image of the

specimen magnified and focused by said system of magnifying lenses, said method comprising the steps of:

focusing said electron beam emitted from said electron gun onto the specimen, scanning the focused electron beam across the specimen in two dimensions, and determining a field of view on the specimen to be photographed using a TEM image created by the electron beam transmitted through the specimen at this time;

focusing the electron beam off said field of view to be photographed on the specimen and performing a focusing operation or stigmatic correction using a TEM image created by the electron beam transmitted through the specimen; and

focusing the electron beam onto said field of view to be photographed and taking a photograph of the TEM image created by the electron beam transmitted through the specimen.

5. A method of photographing a transmission electron microscope (TEM) image as set forth in claim 4, wherein the state of excitation of said system of condenser lenses assumed during the step of determining the field of view is the same as the state of excitation of said system of condenser lenses assumed during said focusing operation or stigmatic correction.

6. A method of photographing a transmission electron microscope (TEM) image as set forth in claim 4, wherein said electron microscope further includes a stigmatic correction means, and wherein said step of scanning the focused electron beam across the specimen in two dimensions uses an electron beam having astigmatism that elongates the cross section of the electron beam in a direction vertical to the scanning direction of the electron beam.